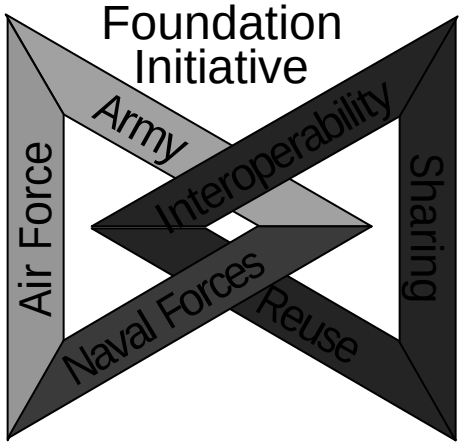
Foundation Initiative 2010
Bringing Order and Consistency Across Borders



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FI 2010 Project Manager
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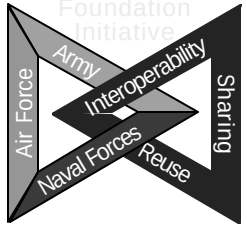
1 Mar 2000

Foundation Initiative 2010 Mission Summary



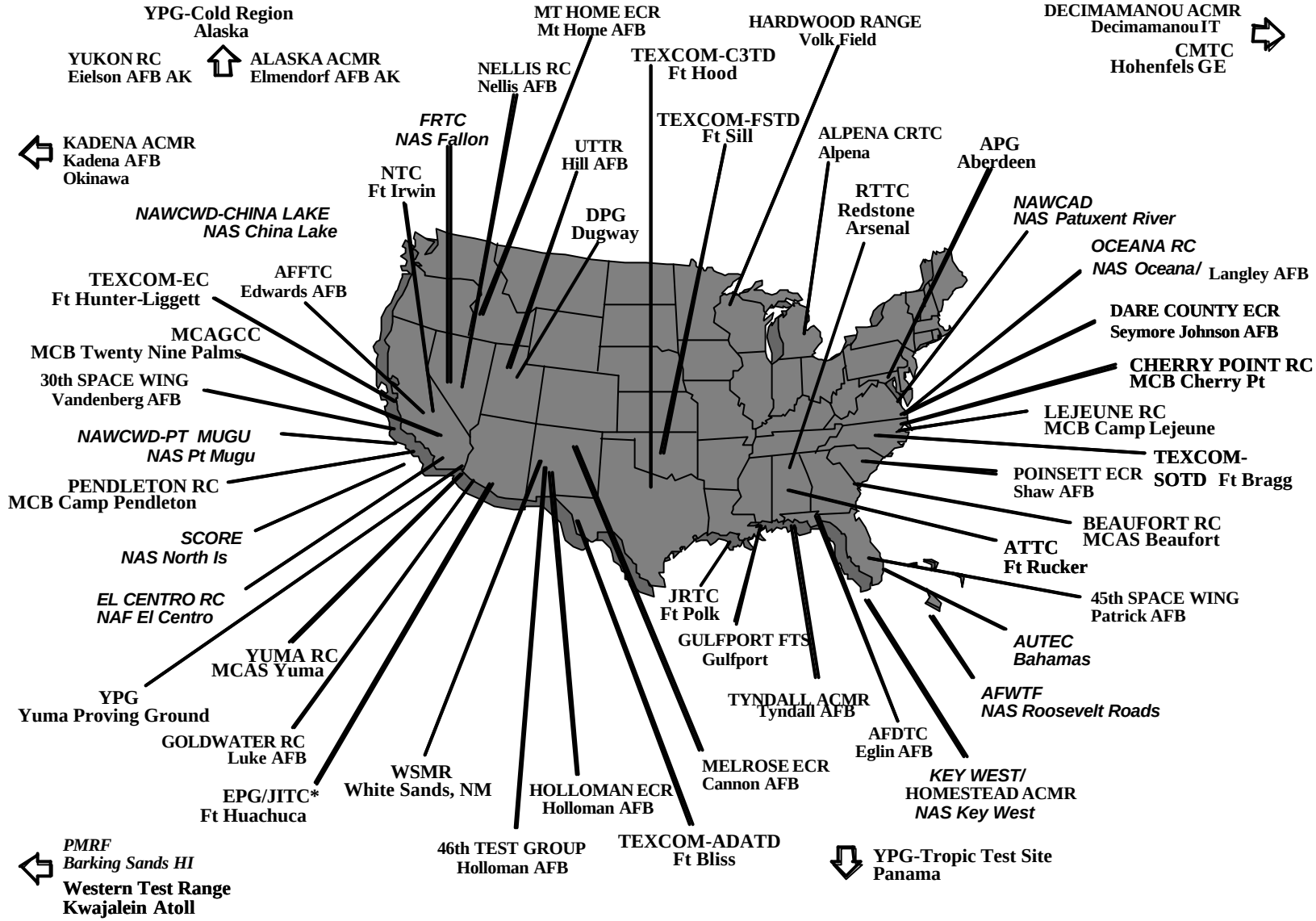
Provide the Core Products necessary to:

- **Enable <u>Interoperability</u> among Ranges, Facilities, and Simulations in a quick, cost-efficient manner**
- **Foster <u>Reuse</u> for Range asset utilization and for future developments**

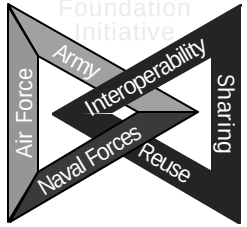
- **Supports the Warfighter (Joint Vision 2010)**
- **Enables Simulation Based Acquisition & STEP**
- **Fosters Test and Training Integration**
- **In the long term: SAVES MONEY!**

Lay the Foundation for Future Range Instrumentation

Major U.S. Test & Training Ranges

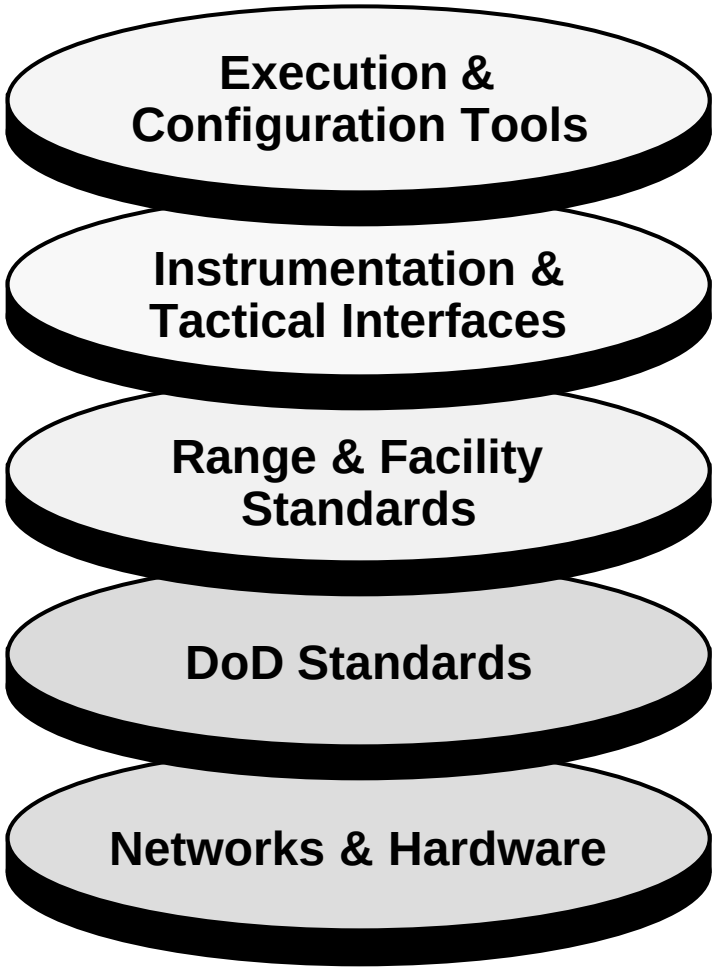


Foundation Initiative 2010
Why is it Needed?



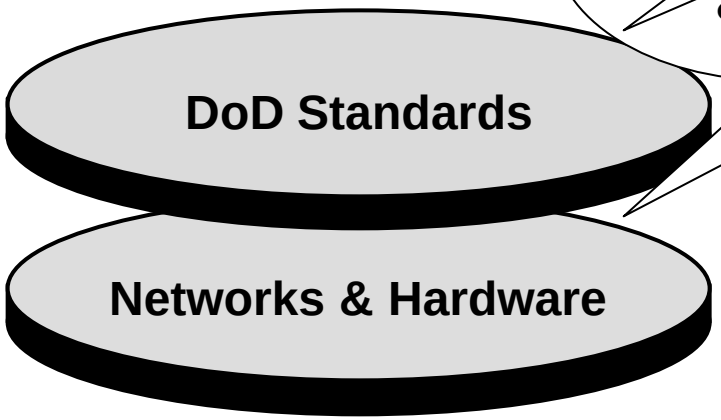
- **Emerging Warfighter Concepts**
  - **Joint Vision 2010**
  - **Network-Centric Warfare**
- **Advanced, Complex Weapon Systems**
  - **Integrated subsystems require full spectrum testing**
  - **Required test conditions exceed capabilities at a single range**
- **Reduced Range Infrastructure Funding**
  - **Operations (planning, execution, & analysis) must be cost-efficient**
  - **Development and maintenance costs must be optimized**
- **New Acquisition Strategies**
  - **Simulation Based Acquisition (SBA)**
  - **Simulation, Test and Evaluation Process (STEP)**

Layers to Interoperability & Reuse



Layers to Interoperability & Reuse

- **Rule-based instead of Technology-based**
- **Interoperability with:**
  - **Modeling & Simulation**
  - **Weapon Systems**
  - **C4ISR**
- **Leverage existing work**
  - **[illegible]cryption equipment**
  - **FedEx, UPS, US Postal Service**

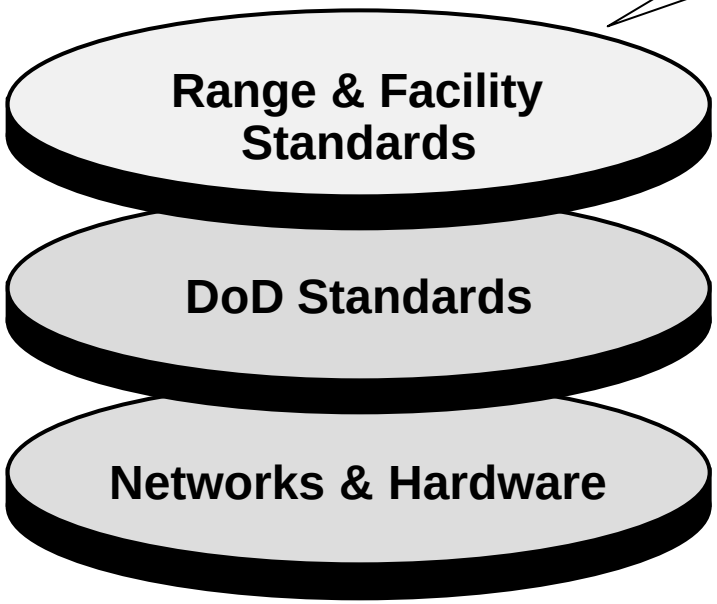


Comply with the Joint Technical Architecture (JTA) & the High Level Architecture (HLA)

Leverage Existing DoD Networks & Commercially Available Hardware

Range Data Standards

- **Must have data agreements**
  - **Data definitions**
  - **Data types**
  - **Data formats**
- **FI 2010 Objective: Establish RCC standards**

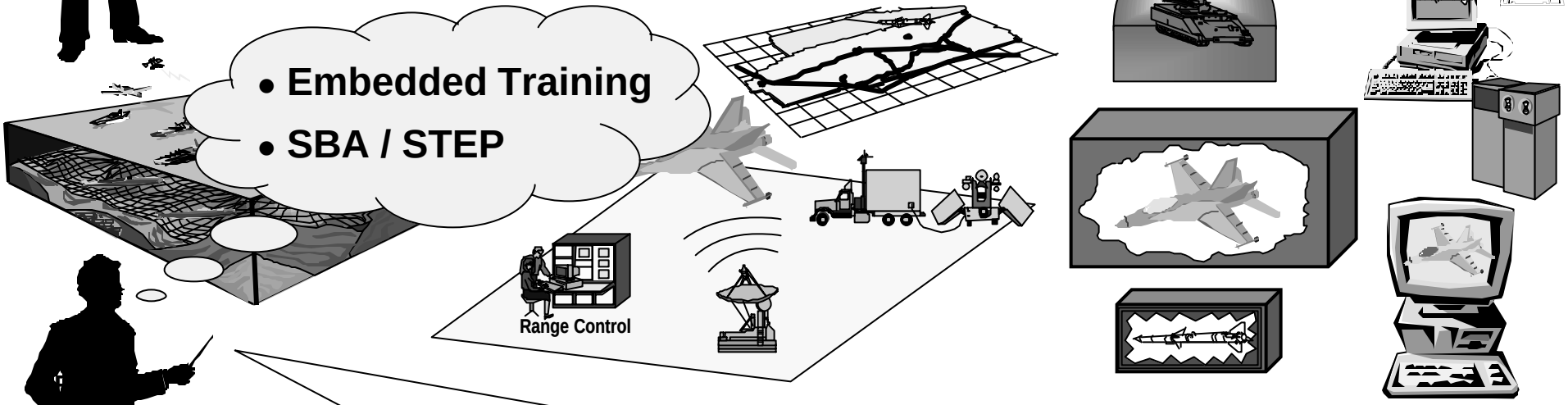


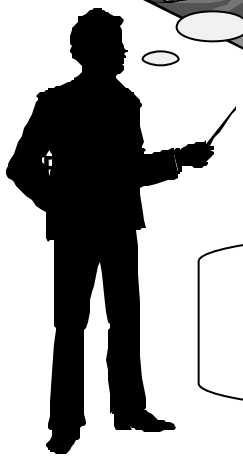
Comply with the Joint Technical Architecture (JTA) & the High Level Architecture (HLA)

Leverage Existing DoD Networks & Commercially Available Hardware

Range Domain Analysis

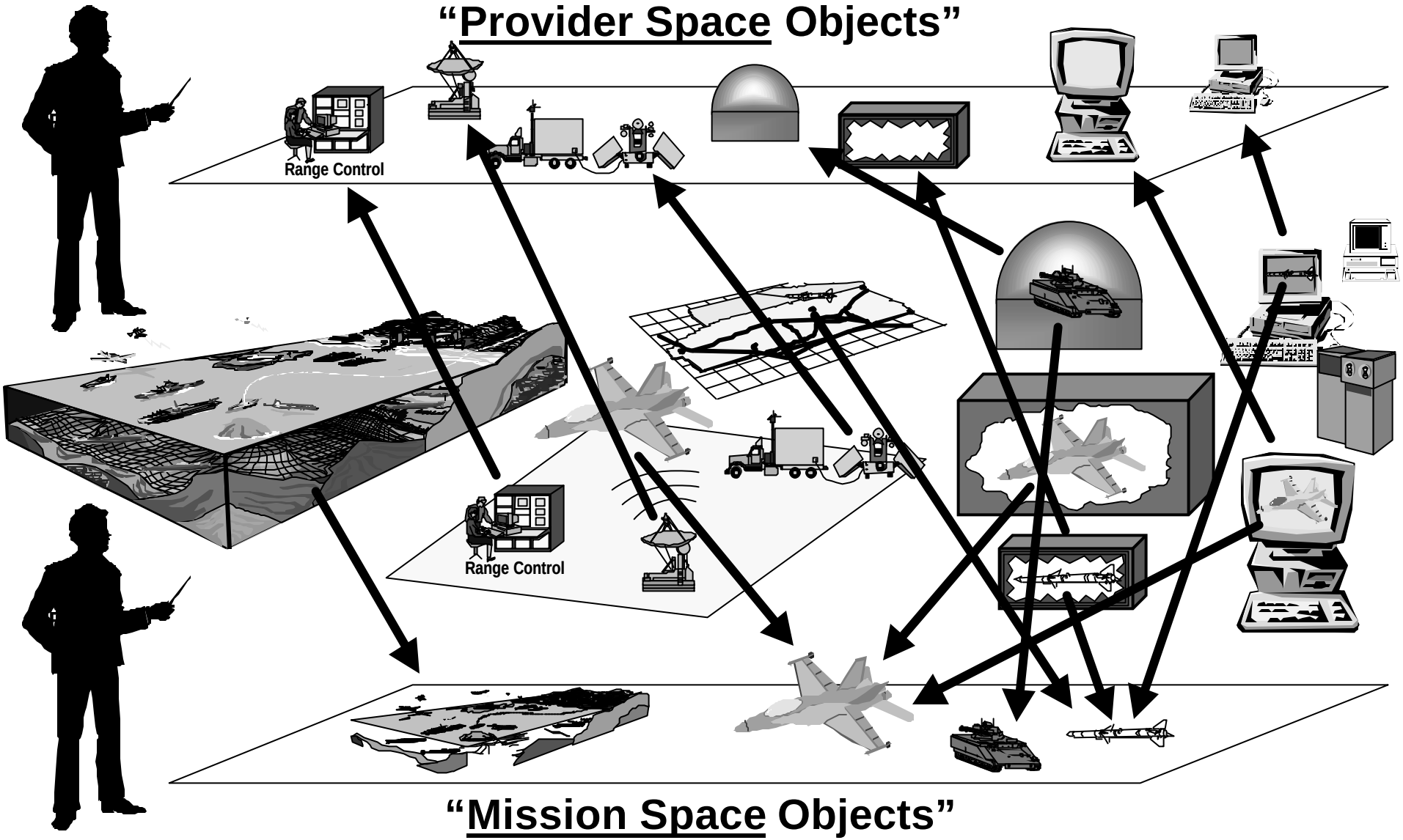
"I want to support my customers … plus I want to lower my development, maintenance, and operations costs"



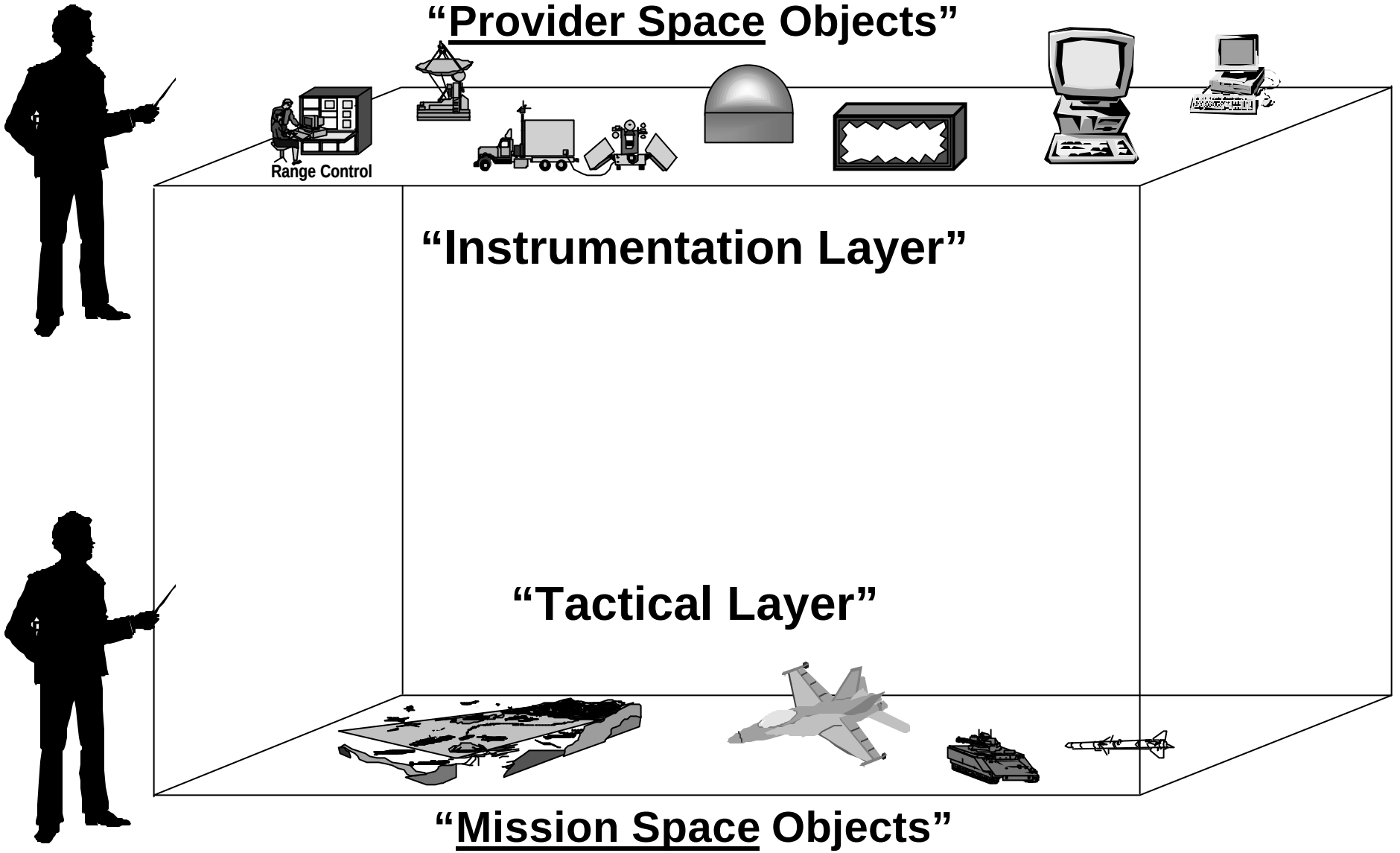


"I want more insight to how my system performs or to the level of proficiency of my warfighters at less cost"

Objects Provide a Solution for Interoperability & Reuse

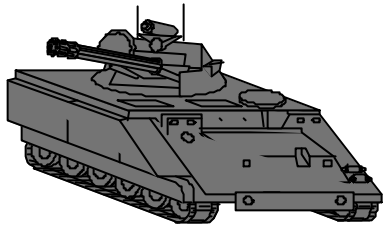


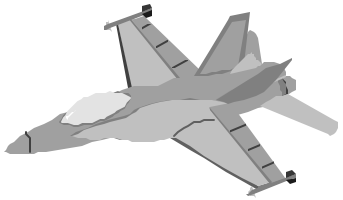
Sometimes this Concept is Expressed in a Tiered Chart

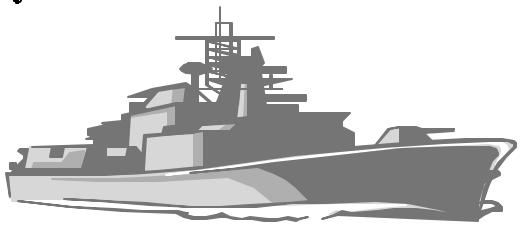


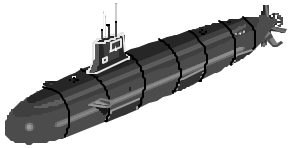
Mission Space Objects

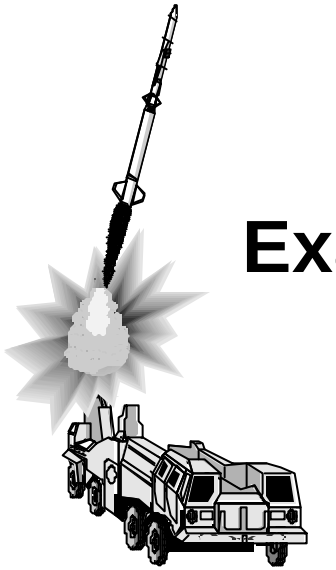
“Things” in the test or training exercise





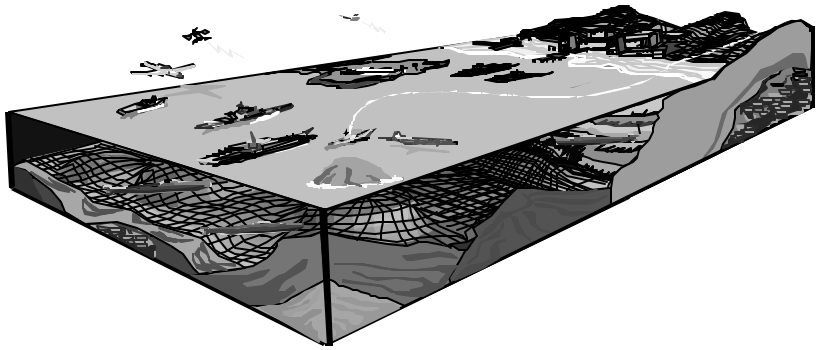






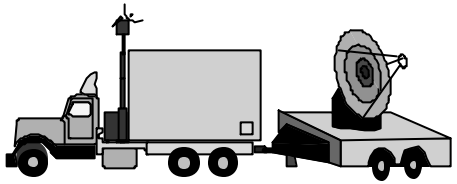
Examples include:

- System(s) Under Test
- Training Participants
- Threats
- Environment

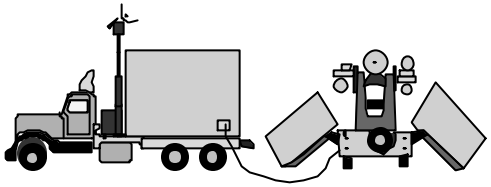


Provider Space Objects

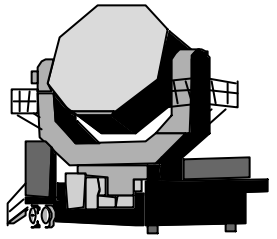
"Things" that support a test or training exercise



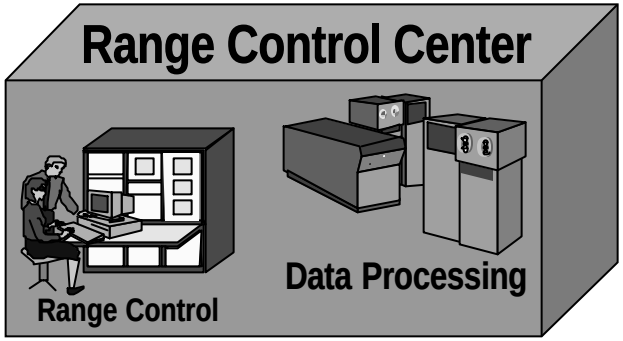
Telemetry

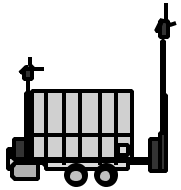


Optics

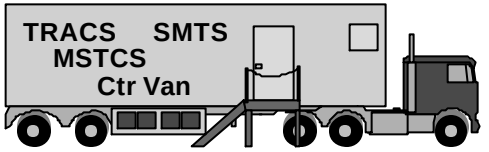


Radar





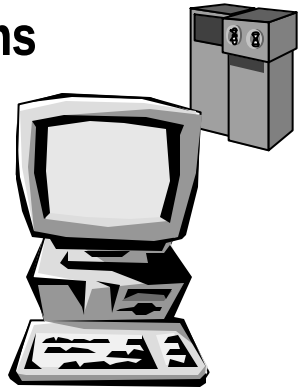
GPS



Autonomous Systems

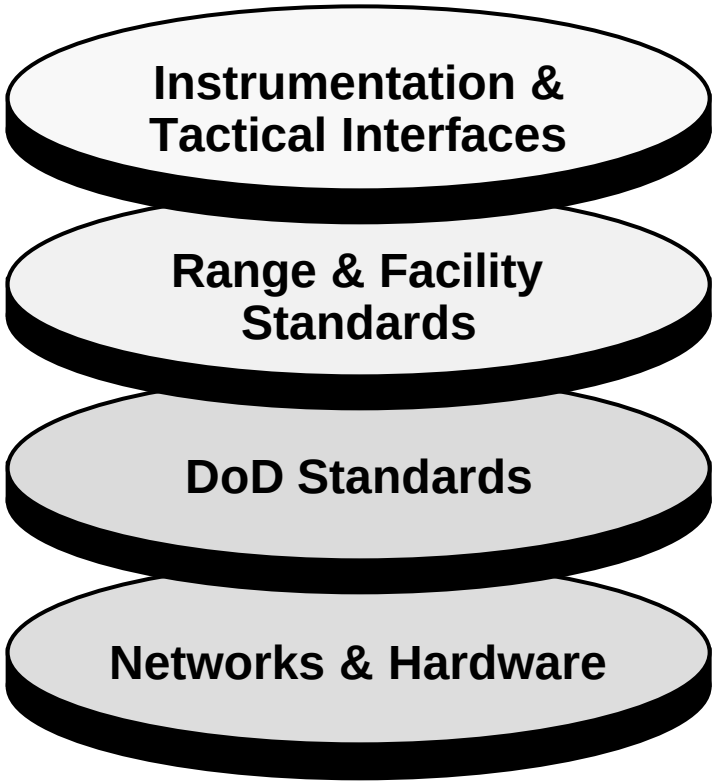
Examples include:

- Instrumentation
- Hardware-in-the-Loop Facilities
- Simulations
- Range Control Systems



Simulations

Standard Software Interfaces for Range Instrumentation

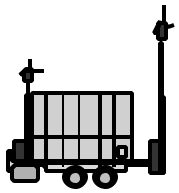


- **Perform some universal functions**
  - **Data logging**
  - **Data translation & conversion**
  - **Standard system control functions**
- **Defined by configuration files**
- **Easy to develop (maximize reuse)**

Comply with the Joint Technical Architecture (JTA) & the High Level Architecture (HLA)

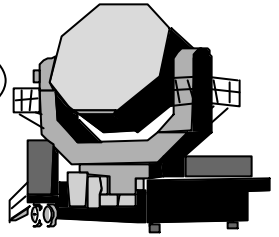
Leverage Existing DoD Networks & Commercially Available Hardware

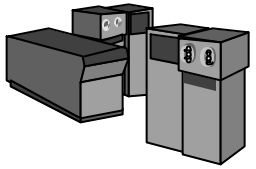
Test and Training ENabling Architecture (TENA) Software



"Mission Space" Objects

"Provider Space" Objects





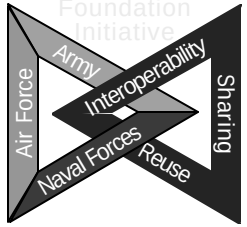
Range Resource Application Software

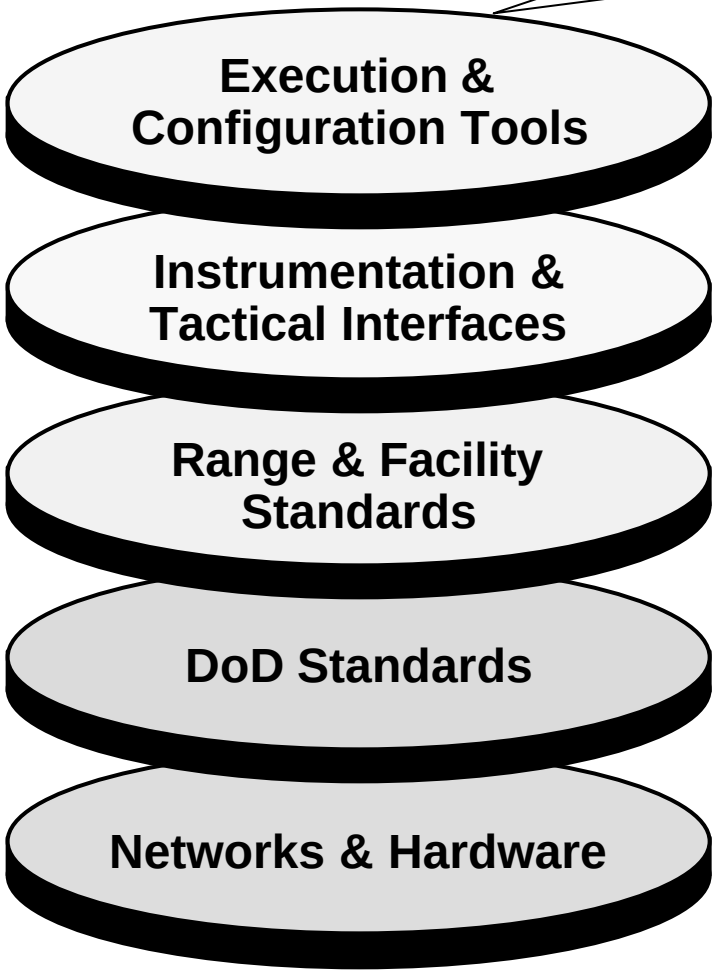
Standard API to manipulate Range Data

TENA Middleware

TENA Object Services				
TENA Distribution Services				
HLA Interface	IP Interface	DCOM Interface	○○○	CORBA Interface
HLA RTI	Protocols	DCOM	●●●	CORBA

Range Operations Support Tools



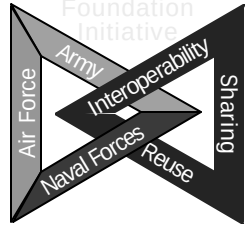


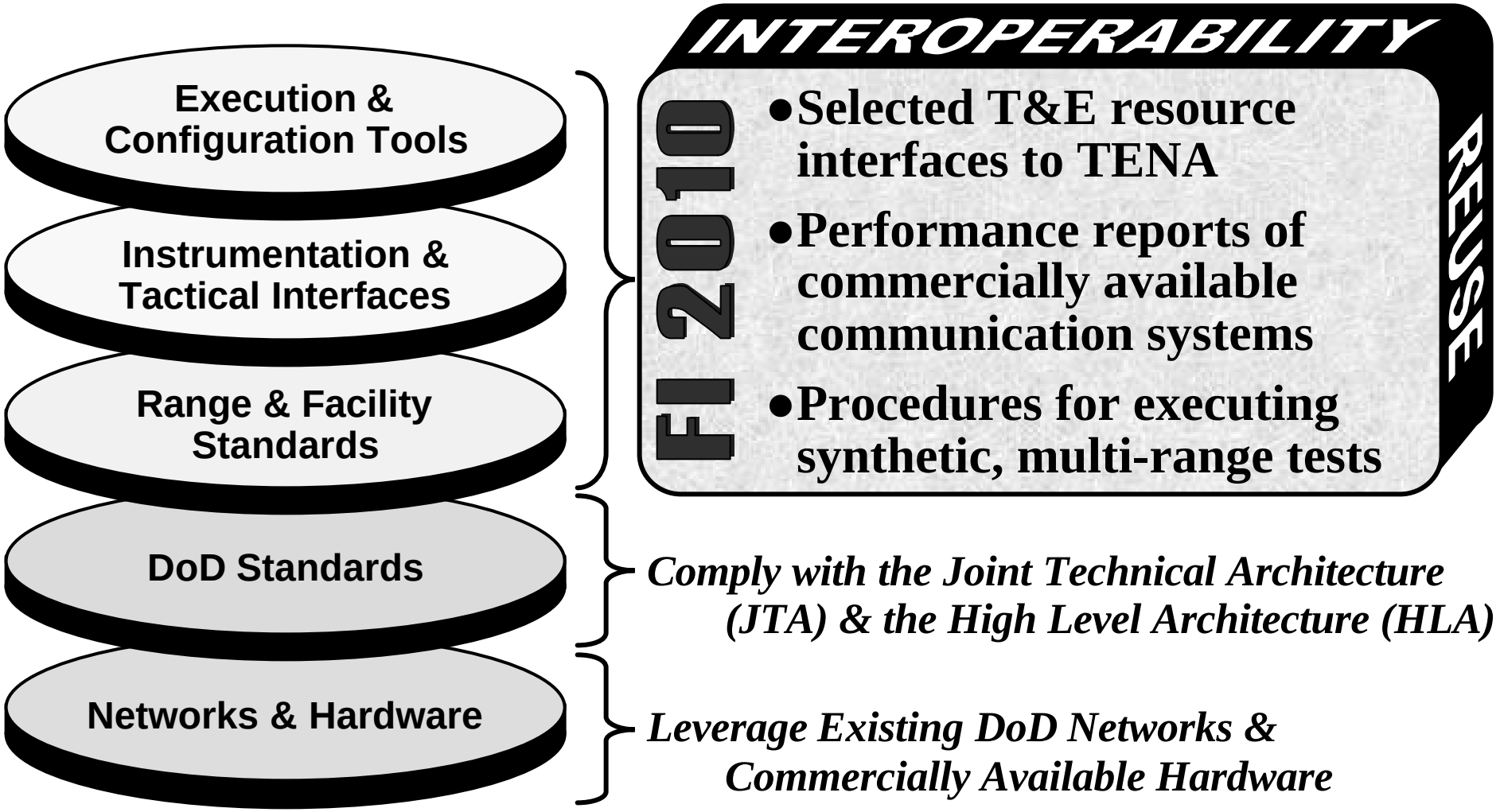
- **Leverage Commercial-off-the-Shelf and Government-off-the-Shelf**
- **Features Needed:**
  - **Resource Definition & Management**
  - **Test Mission/Exercise Planning**
  - **Test Mission/Exercise Management**
  - **Test Mission/Exercise Analysis**

Comply with the Joint Technical Architecture (JTA) & the High Level Architecture (HLA)

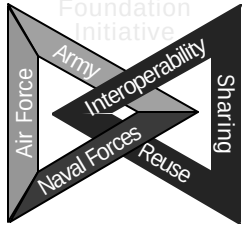
Leverage Existing DoD Networks & Commercially Available Hardware

Foundation Initiative 2010 Product Summary



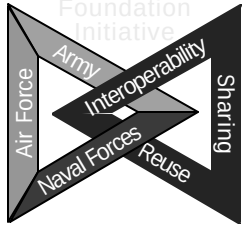


Critical to Our Success



- **Range Buy-in**
  - **Range personnel are the majority of the development team**
  - **Development Test Cells (DTCs) at multiple ranges**
  - **Range Commanders Council (RCC)**
  - **Common Test & Training Range Architecture (CTTRA) workshops**
- **Acquisition Program Involvement**
  - **Exercises trace to acquisition program requirements**
  - **Tracking Service Acquisition Reform/Streamlining efforts**
  - **MOA with Joint Strike Fighter (JSF)**
- **Training Community Involvement**
  - **Common Test & Training Range Architecture (CTTRA) workshops**
  - **Army Test & Training Interoperability Conferences (ATTIC)**
  - **Joint Test & Training Capability Assessment (JTTCA)**
  - **Joint Test & Training Range Roadmap (JTTRR)**
- **M&S Community Involvement**
  - **Defense Modeling & Simulation Office (DMSO) Cadre**
  - **Architecture Management Group (AMG)**
  - **Simulation Interoperability Workshop (SIW)**

Collaboration Efforts for Leveraging



- **Partnerships**

  JSF SETI AHRP JADS DMSO

- **<u>Some</u> of the Projects We are Coordinating with:**

  DREN VPG JDEP JTCTS JCTEC CTIA

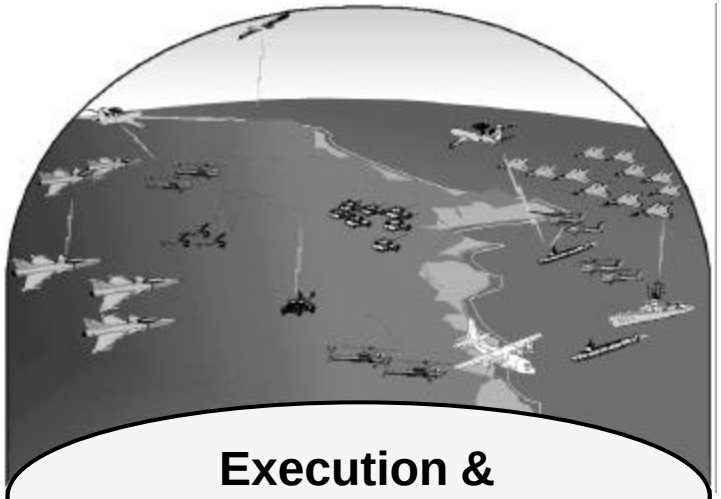
  NavAir NCW USB VEPG NavSea DEP

- **<u>Some</u> of the Projects We are Tracking:**

  ECCN NASA RBNB JDAN JSIMS VMR

  VISION DMT TMDSE TSN JMASS

  MSTCS SIAP MPARTA KMR Radar Mod.



Execution & Configuration Tools

Instrumentation & Tactical Interfaces

Range & Facility Standards

DoD Standards

Networks & Hardware

Lower Costs

Enhanced Testing

Improved Training

INTEROPERABILITY

FI 2010

- Migrates existing T&E resources to a Common Architecture
- Enables T&E resources to be easily reconfigured to support specific test missions
- Provides recommended practices and lessons learned for executing synthetic, multi-range test events

REUSE

Complies with the Joint Technical Architecture (JTA) & the High Level Architecture (HLA)

Leverages Existing DoD Networks & Commercially Available Hardware